Problem Statement

Enhancing the ability of train station staff to manage congested and degraded operations in and around lifts and escalators

FW 18-04

Future Transport Workforce

Problem Description

Question	Response
Description of the problem and purpose of the proposed research	Across the NSW rail network, escalators and lifts are used to facilitate vertical customer movement. This includes the implementation of different escalator and lift designs to meet the unique needs and constraints at each individual train station. Current transport infrastructure includes a large number of escalators and lifts, and this number may increase with the planned construction of additional infrastructure to address future transport needs. In addition, the Transport Access Program aims to provide stations that are accessible to people with a disability, limited mobility and parents with prams. Despite the obvious benefits of escalators and lifts in facilitating vertical people movement, escalators and lifts are also associated with a range of challenges, particularly under conditions of congested and degraded operations (e.g. crowding, breakdown, reduced/no lighting, fire, trip hazards, accidents and customer behaviour issues). The challenges associated with vertical people movement are often witnessed and managed by train station staff and managers. It is therefore critical to enhance the ability of train station staff to manage congested and degraded operations in and around lifts and escalators. The purpose of the proposed research is to identify challenges and solutions in the management of congested and degraded operations in and around escalators and lifts. This knowledge will contribute to the development of new human management strategies and solutions to improve safety, customer experience, train staff competency, and interactions between train station staff and customers. It also has the capacity to influence future interchange design and redesign.

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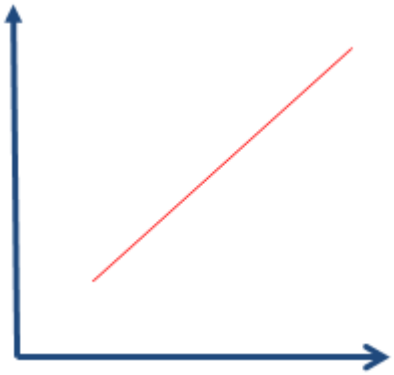
Hypothesis & Variables

Question	Response
For explanatory research, please describe a clear hypothesis with variables for testing **For exploratory research,** please describe how the proposed research will contribute to future explanatory research	The purpose of the proposed research is to identify challenges and solutions in the management of congested and degraded operations in and around escalators and lifts, with a view to improving future management of degraded operations. This research is comprised of two phases: • **Phase 1 (Quantitative):** Analysis of Transport for NSW (TfNSW) data regarding escalator and lift-related accidents and incidents, including an evaluation of accidents/incidents by type of escalator/lift (e.g. design, length), breakdown and reliability profiles, and response outcomes (e.g. recovery time). • **Phase 2 (Qualitative):** Interviews with a range of Train Station Managers/staff to evaluate challenges and possible solutions regarding management of degraded operations in and around escalators and lifts. Identifying challenges/solutions in managing congested and degraded operations in and around escalators and lifts  Improved management of congested and degraded operations **The diagram above provides a conceptual representation of the proposed exploratory research, and does not imply an explanatory research arm.*

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Strategic Criteria & Alignment

Question	Response
Alignment with strategic theme	This problem statement is aligned with the Strategic Research theme of 'Future Transport Workforce'. This theme is focused on the evolution of skills and talents required for a Future Transport Workforce.
External driver of change analysis **Outline how the research will better position TfNSW to respond proactively to macro drivers of change**	This Problem Statement comprises a number of external drivers of change that present challenges and opportunities for TfNSW. **Political** The proposed research is aligned with Future Transport Strategy 2056, and has implications for policies and practices related to optimising TfNSW's Future Transport Workforce. A key priority for TfNSW is the safety of customers and the general public. This includes safe egress and ingress, and efficient and safe customer flows within our interchanges. In addition, accidents that are attributable to the design and/or operation of TfNSW's services and infrastructure attract significant public interest and pose a reputational risk to the organisation. **Economic** The City Circle is a considerable bottleneck in the Sydney Trains operation, with dwell times around 3 minutes. Any delays in dwell times due to congestion on platforms or accidents around escalators and lifts result in significant delays across the network. Train delays add significant economic costs, and customer accidents within our interchanges can lead to financial liabilities and costs to the organisation if we are found to be at fault. **Social** By identifying challenges and solutions in the management of congested and degraded operations in and around lifts and escalators from the perspective of Train Station Managers/staff, including issues pertaining to disability and accessibility, this research has the capacity to improve interactions between staff and customers. **Technological** Findings from the proposed research will identify challenges and solutions in the management of congested and degraded operations in and around escalators and lifts, with a view to influencing future escalator and lift design and/or recommendations based on behavioural management or community-based social marketing approaches.
Forward looking	In light of planned station upgrades and the future implementation of new train infrastructure/escalators/lifts, the proposed research will enhance the ability of train station staff to manage congested and degraded operations in and around escalators and lifts.
Potential research impact	By understanding the challenges and solutions surrounding the management of congested and degraded operations in and around escalators and lifts, findings from the proposed research will contribute to the current body of knowledge regarding effective train station management and safety assurance competencies.

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Technical Criteria

Question	Response
Innovation **Outline how the proposed research will result in new knowledge**	The proposed research is innovative because it is comprised of both qualitative and quantitative phases to capture a broad understanding of the issues surrounding congested and degraded operations in and around escalators and lifts. Findings from this research will have significant implications for TfNSW's Future Transport Workforce.
Basis in completed research and/or observed practice	Sydney Trains internal research has shown that luggage is the number one cause of slips, trips and falls on escalators. A Sydney Trains initiative to address this issue involved the installation of effective signage around escalators (i.e. signs showing the nearest lift to reduce luggage being taken on escalators). This initiative was found to reduce slips, trips and falls by 50%.
Feasible data requirements	The proposed research will involve qualitative interviews with Sydney/NSW Station Managers/staff, and may also require access to TfNSW data regarding escalator- and lift-related incidents and accidents.

Level of Collaboration & Resource Requirements

Question	Response
Level of collaboration **Please select the level of collaboration required to complete the proposed research**	**1. 'Quick-Fire' Research** ☐ Intense bursts of research activity (e.g. under 8 weeks). Intended to make use of 'hackathon'-type environments, where students/researchers work collaboratively and intensely on particular problems involving data interrogation and visualisation.
	2. Undergraduate Final-Year Research ☒ Suitable for final-year undergraduate students (e.g. capstone, Honours) as part of the research requirements for their undergraduate degree (i.e. 1 to 2 semesters).
	3. Higher Degree Research ☐ Project may form whole or part of a postgraduate research degree (i.e. Masters, PhD), and contribute to new knowledge (i.e. 1 to 3 years).
	4. Major Collaborations and Funded Research ☐ Project may form the basis for a significant collaboration agreement between TfNSW and the relevant research institution, including major competitive grant funding (e.g. Australian Research Council funding with TfNSW as an industry partner).
Comments	One-year research project suitable for final year or Honours thesis.
Supporting TfNSW resources	TfNSW will facilitate data requirements and access to subject matter experts (up to 4 hours per week).

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